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ABSTRACT

This study examined the effects of the Child Development Project, an elementary school program designed to enhance prosocial development on children's peer relations and social adjustment. Research has focused on a longitudinal cohort of children that entered three program schools in kindergarten in the fall of 1982, and completed sixth grade in the spring of 1989. A corresponding cohort of children that attended three other elementary schools in the same district has served as a comparison group. Data were collected from cohort students at all six schools at third and fourth grades, from students at two schools at fifth grade, and from students at four schools at sixth grade. Overall, 236 comparison and 285 program students participated in the research. Data revealed that program students were more accepting of (and more accepted by) their classmates, were less lonely, and were lower in social anxiety than were students at comparison schools. No differences were found between program and comparison students on measures of self-esteem, liking for school, perceived social competence, or perceived popularity. The observed positive effects on peer relations and social adjustment support and extend earlier findings indicating that the program has had positive effects on students' interpersonal behavior in the classroom, social problem solving skills, and commitment to democratic values. Collectively, these studies suggest that the program has consistent positive effects on children's social development throughout the elementary school years. (Author/NB)

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Effects of a Program to Enhance Prosocial Development on Adjustment

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Abstract

This research examined the effects of an elementary school program designed to enhance prosocial development on children's peer relations and social adjustment. Assessments of students at program and comparison schools at third through sixth grades revealed that program students were more accepting of (and more accepted by) their classmates, were less lonely, and were lower in social anxiety. No differences were found between program and comparison students on measures of self-esteem, liking for school, perceived social competence, or perceived popularity. The observed positive effects on peer relations and social adjustment support and extend earlier findings indicating that the program has had positive effects on students' interpersonal behavior in the classroom, social problem solving skills, and commitment to democratic values. Collectively, these studies indicate that the program has a number of consistent positive effects on children's social development throughout the elementary school years.

Effects of a Program to Enhance Prosocial Development on Adjustment

Empirical research demonstrating the importance of children's peer relations to socialization and sociomoral development has been steadily accumulating since the publication of findings from longitudinal studies in the early 1970's indicating that childhood problems in peer relations were predictive of serious adjustment problems in adolescence and adulthood (Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Roff, Sells, & Golden, 1972). A recent review of this body of work (Parker & Asher, 1987) provided considerable support for the hypothesis that poor peer relations in childhood are associated with difficulties later in life, and considerable effort has been directed in the last decade both toward improving the predictive validity of assessment procedures used to identify children who are at risk for adjustment problems, and toward designing effective prevention programs for school-aged youth (e.g., Schneider, Rubin, & Ledingham, 1985; Strain, Guralnick, & Walker, 1986).

This paper describes the effects of an intensive and comprehensive school-based intervention program on children's peer relations and social adjustment. The program, known as the *Child Development Project* (CDP; Battistich, Watson, Solomon, Schaps, & Solomon, in press; Watson, Schaps, Battistich, Solomon, & Solomon, 1989), was designed to promote the development of prosocial values, dispositions, and behavior, and consists of the following interrelated and mutually-reinforcing components: (a) *developmental discipline*—an approach to classroom management that facilitates the development of self-control and the internalization of prosocial norms by creating a positive interpersonal climate in the classroom, involving students in classroom rule-setting and decision-making, and using non-authoritarian control techniques centering around induction and mutual problem-solving; (b) *cooperative activities*—in which students work together in small groups on academic and nonacademic tasks, are encouraged to strive for fairness, consideration, and social responsibility, and are helped to develop relevant group interaction skills; (c) *opportunities for prosocial action*—in which older students help and care for younger students, and students at all grade levels take responsibility for classroom chores, help maintain and improve the school environment, and perform charitable community service activities; and (d) *activities to promote interpersonal understanding and prosocial values*—in which class meetings, discussions and, particularly, exemplary works of literature are used to enhance student's sensitivity to and understanding of the feelings, needs, and perspectives of others, and to heighten their awareness of the importance of prosocial values to social relationships.

The program has been delivered to students at three suburban elementary schools in Northern California since the 1982-1983 school year. Research on program effects has been focused on a longitudinal cohort of children that entered the program schools in kindergarten in the fall of 1982, and completed sixth grade in the spring of 1989. A corresponding cohort of children that attended three other elementary schools in the same district has served as a comparison group. These six schools were formed into two groups (matched for size, student achievement, family SES, and teacher interest in the program) which were randomly assigned to program or comparison status. Assessments of a large, cross-sectional random sample of students at the program and comparison schools prior to the start of the program showed no large or consistent differences in social attitudes, values, skills, or behavior.

Yearly assessments of classroom implementation and student outcomes have been conducted since the start of the program. Classroom observations consistently have shown that program classrooms differed significantly from comparison classrooms in implementation of each of the program elements described above, and these findings have been corroborated by teacher and student reports (see Solomon, Watson, Delucchi, Schaps, & Battistich, 1988). Previously-reported findings from analyses of student outcomes among the longitudinal cohorts through fourth grade indicate that the program significantly increased spontaneous prosocial behavior (e.g., helpfulness, cooperation, giving of affection, support, and comfort) among students in class (Solomon et al., 1988), and had significant positive and cumulative effects on students' social problem-solving and conflict resolution skills (Battistich, Solomon, Watson, Schaps, & Solomon, 1989) and commitment to democratic values (Solomon, Watson, Schaps, Battistich, & Solomon, 1990). The studies reported in this paper extend the research on program effects to the domains of peer acceptance and social adjustment, and describe the findings from additional assessments of the longitudinal cohorts at third through sixth grades.

Method

Data were collected during the spring of each school year as part of the project's regularly-scheduled research activities. All children in the program and comparison cohorts for whom parental permission had been obtained (at least 80% of the students each year) were assessed, with children who entered the schools each year being added to the sample. The data examined here were collected from cohort students at all six schools at third and fourth grades, from students at two of the schools (one program and one comparison) at fifth grade, and from students at four of the schools (two program and two comparison) at sixth grade. Overall, 236 comparison (118 boys and 118 girls) and 285 program students (140 boys and 145 girls) participated in this research.

Measures of peer acceptance and social adjustment were obtained from sociometric assessments at third and fifth grades, and from questionnaires administered at fourth through sixth grades. In the sociometric assessments at third grade, students were asked to nominate three of their classmates with whom they would like to interact in each of five situations—two academic ("work with on a class project" and "get help from with your schoolwork") and three non-academic ("invite to your birthday party," "choose to be on your sports team," and "get help from when you are feeling sad"); at fifth grade, students were asked to name the classmates that they "liked the most," and then were provided with a class list and asked to nominate classmates who fit each of 12 behavioral descriptions (e.g., "really go out of their way to help someone," "say what they think even when other people might not agree," "spend a lot of time by themselves"). These assessments yielded measures of peer acceptance, and of prosocial, antisocial, assertive, and withdrawn behavior.

The questionnaires included measures of self-esteem (fourth grade; $\alpha = .87$), liking for school (fourth through sixth grades; $\alpha = .78$), social competence (fourth and fifth grades; $\alpha = .84$), popularity (fifth grade; $\alpha = .83$), loneliness and social dissatisfaction (sixth grade; $\alpha = .90$), and social anxiety (sixth grade; $\alpha = .82$). The latter two measures were

developed by Asher, Hymel, and Renshaw (1984), and La Greca, Dandes, Wick, Shaw, and Stone (1988), respectively. All of the remaining measures were developed by project staff.

Results and Discussion

Peer Acceptance

The third grade sociometric data were scored for the total number of nominations received (the number of nominations made by each student was fixed at 15: 3 classmates for each of the 5 situations), the number of reciprocated nominations, and the number of roles nominated for. Nominations of the same classmate for two or more of the five situations by a given student were counted as a single nomination in computing total received, so the score actually represents the number of classmates who nominated a student for at least one of the situations. In addition, because sex biases in peer nominations are very prevalent (e.g., Asher & Hymel, 1985), nominations made and received were tabulated separately for same-sex and opposite-sex classmates. In order to control for differences in class size and sex composition, the nomination scores were converted to percentages of the maximum scores possible for students in each classroom.

Preliminary analyses indicated that the number of nominations received by a child was positively correlated with the number of years he or she had been in the school ($r = .15$, $p = .002$). Consequently, the nomination scores were analyzed using a 2 (program vs. comparison group) $\times$ 2 (sex) multivariate analysis of covariance (MANCOVA), controlling for years in the school. This analysis yielded significant effects for sex ($F(5,302) = 6.17$, $p < .001$) and program status ($F(5,302) = 3.80$, $p = .002$). Although girls and boys did not differ in the total number of classmates who nominated them, the number of roles they were nominated for, or the number of reciprocated nominations ($F(1,306) < 1.06$, $ps > .30$), girls made more cross-sex nominations ($M = 13.28\%$) than boys ($M = 6.89\%$; $F(1,306) = 12.79$, $p < .001$) and, correspondingly, boys received more cross-sex nominations ($M = 8.49\%$) than girls ($M = 4.87\%$; $F(1,306) = 9.05$, $p = .003$).

Differences between program and comparison students in mean peer acceptance scores are shown in Table 1. Across the five situations, program students were nominated by significantly more of their classmates than were comparison students and, in particular, both made and received significantly more cross-sex nominations than comparison students. Program and comparison students did not differ significantly in the number of roles they were nominated for by their classmates, nor in the extent to which their choices were reciprocated.

In order to determine whether the greater acceptance of opposite-sex classmates on the part of program than comparison students was primarily attributable to choices for school-related activities (i.e., the class project and help with schoolwork situations), the cross-sex nominations scores were reanalyzed using 2 (program vs. comparison) $\times$ 2 (sex) $\times$ 5 (situation) mixed model analyses of variance (ANOVAs). In addition to replicating the main effects for sex and program status found in the previous analysis, these analyses also indicated that the number of cross-sex choices made and received varied significantly by situation ($F(5) > 11.71$, $ps < .001$) and the sex $\times$ situation interaction ($F(5) > 7.48$, $ps < .001$).

Table 1
Mean Peer Acceptance Scores from Third Grade Sociometric Assessment

Measure	Group		Univariate <i>F</i>
	Comparison	Program	
Number of Roles Nominated For ^a	4.27	4.36	<1.00
Number of Nominators	24.57	26.65	2.97 ⁺
Cross-Sex Nominations Received	4.97	8.33	11.01 ^{**}
Cross-Sex Nominations Made	7.49	11.78	8.53 ^{**}
Reciprocated Nominations	53.13	55.24	<1.00

Note. Except for the number of roles nominated for, all values represent mean percentages of the maximum score possible, given the size and sex composition of the students' classroom. Sample sizes = 140 comparison (60 girls and 80 boys) and 171 program students (84 girls and 87 boys).

^aMaximum score = 5.00.

⁺*p* < .10. ^{**}*p* < .01.

Overall, students chose opposite-sex classmates more frequently to work with on a class project, to get help from with schoolwork, and to have on their sports team (*Ms* = 6% - 11%) than to invite to their birthday party or to get help from when feeling sad (*Ms* = 2% - 3%). Boys made (and girls received) more cross-sex nominations in the birthday party and help when sad situations, whereas girls made (and boys received) more cross-sex nominations in the school- and sports-related situations. More important, however, the program status x situation interaction was not statistically significant for either cross-sex nominations made or cross-sex nominations received (*Fs* < 1.00, *ps* > .69), indicating that the greater acceptance of opposite-sex classmates on the part of program students was not restricted to school-related situations.

Friendship Choices and Behavioral Nominations

In the fifth grade sociometric assessments, students were allowed to nominate as many of their classmates as they wished when asked who they "liked the most," and who fit each of the behavioral descriptions. As with the third grade data, scores for "most liked" nominations made and received (total and cross-sex), and the number of these choices that were reciprocated, were expressed as percentages of the maximum score possible within each classroom. Mean scores on these measures for program and comparison students are shown in Table 2.

As with the third grade nominations, program students had higher scores than comparison students on each of the measures. However, the only statistically significant difference was for the total number of nominations received. The significantly greater acceptance of opposite-sex classmates found in third grade was not replicated. In fact, the only significant multivariate effect from a 2 (program vs. comparison) x 2 (sex) MANCOVA of the fifth grade data

Table 2

Mean Friendship Nominations from Fifth Grade Sociometric Assessment

Measure	Group		Univariate F
	Comparison	Program	
Total Received	16.41	19.64	2.74 ⁺
Cross-Sex Received	5.59	8.28	1.20
Total Made	16.20	18.06	1.14
Cross-Sex Made	5.51	6.39	<1.00
Reciprocated Choices	55.97	57.75	<1.00

Note. All values represent mean percentages of the maximum score possible, given the size and sex composition of the students' classroom. Sample sizes = 42 comparison (20 girls and 22 boys) and 86 program students (46 girls and 40 boys).

⁺p < .10.

(again controlling for number of years in the school) was for sex ($F(5,119) = 5.66, p < .001$). Girls received more cross-sex nominations ($M = 19.13\%$) than boys ($M = 18.00\%$; $F(1,123) = 5.42, p = .02$), and their choices were more often reciprocated ($M = 65.79\%$) than were boys' choices ($M = 47.98\%$; $F(1,123) = 11.96, p = .001$).

Nominations received for each of the 12 behavioral descriptions also were expressed as percentages of the maximum score possible. Factor analysis suggested that nine of the 12 scores could be combined into two higher-order categories: prosocial behaviors (e.g., "really go out of their way to help someone;" 6 items, $\alpha = .93$) and negative behaviors (e.g., disobey rules when the teacher is not around; 3 items, $\alpha = .82$). Mean nomination scores for these two categories and the remaining three behavioral descriptions, broken down by program status and sex, are shown in Table 3.

Table 3

Mean Behavioral Nomination Scores from Fifth Grade Sociometric Assessment

Measure	Comparison		Program	
	Girls	Boys	Girls	Boys
Prosocial Behaviors	27.83	20.08	29.13	17.69
Negative Behaviors	25.50	43.93	28.97	42.96
Always Tries to Outdo Others	12.41	16.49	11.40	16.40
States Opinion Even When Others Disagree ^a	17.27 _a	27.73 _b	21.38 _{ab}	24.67 _{ab}
Spends Much Time Alone ^a	8.02	13.68	10.68	9.36

Note. All values represent mean percentages of the maximum score possible, given the size of the sample from each classroom. Sample sizes = 45 comparison (23 girls and 22 boys) and 89 program students (48 girls and 41 boys).

^aUnivariate Group x Sex interaction significant at $p < .05$. Means that do not share a subscript differ at $p < .05$, Scheffe post-hoc comparison.

A 2 (program vs. comparison) $\times$ 2 (sex) MANCOVA of the behavioral nomination scores, controlling for number of years in the school, yielded a significant effect for sex ($F(5,125) = 9.66, p < .001$). As shown in Table 3, girls received more nominations for prosocial behaviors ($F(1,129) = 17.78, p < .001$), and boys received more nominations for negative ($F(1,129) = 39.18, p < .001$) and competitive behaviors ($F(1,129) = 3.99, p = .05$). Although the multivariate effect of program status was not significant, there was a significant multivariate status $\times$ sex interaction ($F(5,125) = 2.57, p = .03$). Comparison boys were nominated more often than comparison girls as "spending a lot of time by themselves," whereas program boys were nominated as fitting this description somewhat less often than program girls ($F(1,129) = 4.44, p = .04$). Comparison boys also received significantly more nominations than comparison girls on the item "say what they think even when other people might not agree," whereas program boys and girls were nominated equally often for this description ($F(1,129) = 3.89, p = .05$).

Self-Report Measures of Personal and Social Adjustment

Mean scores for program and comparison students on the questionnaire measures administered in fourth through sixth grades are presented in Table 4. There were no significant program effects on these variables at either fourth or fifth grades (multivariate F s $< 1.00, p$ s $> .56$). However, a 2 (program vs. comparison) $\times$ 2 (sex) MANCOVA (controlling for years in the school) did yield a significant effect for program status at sixth grade ($F(3,231) = 4.24, p = .006$), as well as a significant effect for sex ($F(3,231) = 6.20, p < .001$). With respect to sex differences, girls liked school significantly more than boys (M s = 1.94, 1.77; $F(1,233) = 6.86, p = .009$) and scored higher in social anxiety than boys (M s = 2.89, 2.68; $F(1,233) = 3.11, p = .079$), whereas boys were significantly higher in loneliness and social dissatisfaction than girls (M s = 1.94, 1.77; $F(1,233) = 11.87, p = .001$).

Consistent with the greater peer acceptance evidenced in both the third grade and fifth grade sociometric assessments, program students reported that they were significantly less lonely and socially dissatisfied than comparison students. In addition, program students scored significantly lower than comparison students in social anxiety, indicating that they are less concerned about being negatively evaluated by peers, and are less likely to avoid social situations because of feelings of distress (La Greca et al., 1988).

Table 4
 Mean Scores on Self-Report Measures of Personal and Social Adjustment

Measure	Group		Univariate <i>F</i>
	Comparison	Program	
<u>Fourth Grade^a</u>			
Liking for School	1.86	1.82	1.13
Social Competence	2.40	2.38	<1.00
Self-Esteem	2.40	2.35	1.47
<u>Fifth Grade^b</u>			
Liking for School	1.63	1.66	<1.00
Social Competence	2.33	2.35	<1.00
Popularity	2.48	2.56	<1.00
<u>Sixth Grade^c</u>			
Liking for School	1.81	1.89	1.51
Loneliness/Social Dissatisfaction	2.00	1.75	11.87**
Social Anxiety	2.90	2.70	4.74*

^a146 comparison (71 girls, 75 boys) and 148 program (64 girls, 84 boys).

^b43 comparison (22 girls, 21 boys) and 77 program (41 girls, 36 boys).

^c101 comparison (55 girls, 46 boys) and 148 program (67 girls, 70 boys).

p* < .05. *p* < .01.

General Discussion

The present findings, spanning a period of four years and encompassing both self-report and sociometric indices, provide considerable evidence that the CDP intervention program has had significant positive effects on children's peer relationships and social adjustment. Students at program schools, relative to those at comparison schools, were chosen by more of their classmates as preferred interaction partners at third grade, and were well-liked by more of their classmates at fifth grade. Importantly, this greater social acceptance among program children was not restricted to school-related activities (e.g., "work with on a class project"), but also was found for purely social activities (i.e., "invite to your birthday party") and relatively intimate interactions (i.e., "get help from when you are feeling sad").

Given the greater popularity of program students among their classmates, it is not surprising that program students reported feeling significantly less lonely and socially anxious than comparison students at sixth grade. At the same time, however, these findings are of interest for at least two reasons. Relatively little attention has been paid in the research literature to how children feel about their relationships with peers, and such self-perception measures rarely have been included as outcome variables in intervention studies (Hymel & Franke, 1985). The present findings thus contribute to the small, but growing body of research on children's perceptions of their own peer relationships. More important, children's *negative* evaluations of their social relationships may be of particular clinical significance. For example, researchers have suggested that poor peer relationships may be mediated by variables such as social anxiety (see Hartup, 1970; Rubin, 1985), and both loneliness and social anxiety have been found to be characteristic of children who are actively rejected (as opposed to merely neglected) by their peers (Asher & Wheeler, 1983; La Greca et al., 1988)—a classification that seems to be especially predictive of later maladjustment (Parker & Asher, 1987). Children who are high in loneliness and social anxiety also have been found to see themselves as low in social competence, to view their poor peer relationships as stable and recurring, and to attribute their social failure to internal causes (Hymel & Franke, 1985), suggesting that these children may not only be "at risk" for later adjustment difficulties, but that their interpersonal difficulties may be particularly resistant to intervention efforts.

Curiously, in contrast to the positive findings for perceived loneliness and sociometric indices of popularity, program students did not see themselves as being significantly more popular than comparison students. This inconsistency may be a function of the differential validity of self-reports of positive and negative qualities. For example, Kagan, Hans, Markowitz, Lopez, and Sigal (1982) conducted several studies comparing children's reports of their own characteristics (including popularity) with assessments by their teachers and peers. They found that children's self-reports of socially desirable qualities often seemed to be positively biased (i.e., overestimated, relative to the judgments of teachers and peers), whereas self-reports of negative or undesirable characteristics generally seemed to be quite valid. A social desirability bias or response set also may help to account for another seeming inconsistency between the present findings and those from previous studies. Specifically, although our earlier research has found that program students

consistently score higher than comparison students on measures of social problem solving skills (Battistich et al., 1989), program and comparison students did not differ in perceived social competence in the present study.

Finally, the present findings provide some suggestive evidence that the program may be of some help in reducing sex biases and sex-role stereotyping. Although the strong bias toward same-sex peers among children from preschool through adolescence reported in the literature (e.g., Asher & Hymel, 1981; Hartup, 1989) also was evident among both program and comparison students in the present research (see Tables 1 and 2), program students greatly exceeded comparison students in cross-sex nominations at third grade, and this difference was true among both boys and girls, and for both school-related and social situations. Cross-sex friendship choices at fifth grade also were slightly more prevalent among program than comparison students, but these differences were not statistically significant. One possible explanation for these findings would be the program's extensive use of cooperative learning. There are now a considerable number of studies indicating that cooperative learning has positive effects on interpersonal attraction (see Johnson & Johnson, 1989). Although this research has focused primarily on cross-ethnic relationships and, more recently, on acceptance of handicapped students in "mainstreamed" classrooms, the present findings suggest that these positive effects on interpersonal attraction may extend to cross-sex relationships as well. Equally intriguing is the finding from the fifth grade behavioral nominations that comparison boys were considered to be assertive (a stereotypically male behavior) by their classmates much more often than comparison girls, whereas program girls and boys were nominated as being assertive about equally as often by their classmates (see Table 3). This finding also may be attributable to the program's approach to cooperative learning, which both provides extensive opportunities for cross-sex interaction and emphasizes the equal participation of all group members in discussion and decision-making. The potential of cooperative learning for reducing sex-role stereotypes is a neglected topic that merits attention in future research.

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